

Abstract

# The Future Burden of Type 2 Diabetes in Belgium: A Microsimulation Model <sup>†</sup>

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**Abstract:** Background: Over 60 million people in Europe live with type 2 diabetes (T2D). This high burden is influenced by factors like population aging and increasingly prevalent risk factors such as excess weight, physical inactivity, unhealthy diets, and smoking. Addressing these factors from a public health perspective is challenging due to their complex interactions. Using current data, this study aims to predict the future burden of T2D in Belgium until 2030, as a benchmark to guide preventive strategies. Methods: This study utilized a discrete-event transition microsimulation model. A synthetic population was created using national census data of the Belgian population aged 0–80 years, along with the representative prevalence of diabetes risk factors obtained from the latest (2018) Belgian Health Interview and Examination Surveys. To create the synthetic population, the Simulation of Synthetic Complex Data and Multiple Imputation by Chained Equations method was used. Mortality information was obtained from the Belgian Standardized Procedures for Mortality Analysis database and used to calculate annual death probabilities. From 2018 to 2030, synthetic individuals transitioned annually from health to death, with or without developing type 2 diabetes, as predicted by the Finnish Diabetes Risk Score, and risk factors were updated via strata-specific transition probabilities. Results: A total of 6722 (95%UI: 3421 and 11,583) new cases of type 2 diabetes per 100,000 inhabitants are expected between 2018 and 2030 in Belgium, representing a 32.8% and 19.3% increase in T2D prevalence rate and DALYs rate, respectively. While T2D burden remained highest for lower-education subgroups across all three Belgian regions, the highest increases in incidence and prevalence rates by 2030 are observed for women in general, and particularly among Flemish women reporting higher education levels, with a 114% and 44.6% increase in prevalence and DALYs rates, respectively. Existing age- and education-related inequalities will remain apparent in 2030 across all three regions. Conclusion: The rising burden of T2D in Belgium underscores the importance of preventive strategies. Priority should be given to lower-education groups, but strategies must also be strengthened for individuals of higher socioeconomic status, as they are expected to experience a significant increase in T2D burden.



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assembled the first draft of the manuscript and the technical annex, and J.L.P. wrote the final version. All authors have read and agreed to the published version of the manuscript.

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